CHAPTER 4

RESEARCH DESIGN:
INVESTIGATING THE ACADEMIC SELF-CONCEPT OF LEARNERS WITH HEARING IMPAIRMENT IN DIFFERENT SCHOOL CONTEXTS

4.1 INTRODUCTION

Chapter 4 presents the paradigm in which the research is situated and discusses ways in which the ASC can be probed. The research design is presented, the pilot study is discussed and the yardsticks of research, validity (credibility) and reliability (trustworthiness), are introduced. The methodological principles and processes underpinning the methods in the research design are considered. Finally, the ethical considerations of the research are contemplated.

4.2 PARADIGM AND ASSUMPTIONS

Paradigms are basic sets of beliefs that guide action and feelings about the world and how the world should be understood and studied (Clark, Dyson & Millward, 1998: 173; Denzin & Lincoln, 2000: 19). Contained within the basic set of beliefs of the paradigm are assumptions regarding reality, knowledge of reality and the ways of knowing about that reality (Crabtree & Miller, 1999: 8; Plug *et al*., 1989: 91, 219, 247). Ontology involves the assumptions regarding reality and seeks to determine the nature of everything that is. Epistemology concerns the knowledge of reality and is a philosophical approach to the origin, nature and boundaries of knowledge. Methodology contemplates the ways of knowing about that reality determined by the epistemology as approaches to formulating and studying methods employed to obtain knowledge (Henning, Van Rensburg & Smit, 2004: 15; Plug *et al*., 1989: 91, 219, 247).

The study acknowledges that the ASC of learners with HI exist, but that the ASC is not an objective, singular reality that can be pinpointed exactly. The ASC of learners with HI is a complex, multifaceted reality that can be approximated by different methods, which highlight different facets of the ASC of learners with HI. The bio-ecological perspective on the study is evidence that the ASC of learners with HI is regarded as a construct interactive with and interdependent on the individual and the surrounding systems. Although the importance of knowing the ASC, often expressed as a number on a scale, is not denied, the study

emphasises that understanding of the ASC of learners with HI will contribute equally, if not more, to answers to the research question. Throughout the study, the human dignity of all the participants is acknowledged, and investigation of the research question is approached through the meaning that the participants ascribe to feelings and events in their lives. As the study assumes that reality is subjective and constructed, that there are many truths and that understanding is important, an interpretivist paradigm is followed.

Usually, interpretative studies use a variety of qualitative methods to investigate the research question. As both quantitative and qualitative methods are employed to investigate the ASC of learners with HI, the ways of knowing about and understanding the reality of the ASC of learners with HI in this study differs from methods usually employed in an interpretative study. It is argued that method is subordinate to the paradigm, and that the paradigm prescribes in which ways the method should be employed and knowledge derived from the method should be regarded and interpreted. A multi-method strategy enhances the trustworthiness of the study and highlights different facets of the ASC of learners with HI so that a more comprehensive understanding of the ASC of learners with HI can be achieved. It could, therefore, be argued that a pragmatic interpretivist paradigm is followed in that any method which contributes to understanding of the research question is used (based on Creswell, 2002: 562).

4.3 WAYS IN WHICH THE ASC CAN BE PROBED AND THE SUITABILITY THEREOF FOR GRADE SEVEN LEARNERS, INCLUDING THOSE WITH HI

4.3.1 Orientation

Two ways to probe self-concept, and therefore also ASC, are discerned, namely self-report and forming an inferred impression of self-concept (Botes, 1987: 15, 108). With self-report the participants are required to indicate in a direct or indirect way how they evaluate themselves by making or choosing an appropriate statement or response (Anderson, 1997: 887; Botes, 1987: 15; Meier, 1994: 42; Säljö, 1997: 101), for example when questionnaires (direct) or projection pictures (indirect) are implemented, or when interviews (direct) are conducted (Brinthaupt & Erwin, 1992: 139). An inferred impression of self-concept is based on the choice of responses made by a person, such as an educator, after observing the behaviour of another person, such as a learner in a classroom (Botes, 1987: 15-16). An inferred self-concept can also be obtained subjectively through projection pictures, as the participant makes a choice of responses after observing the behaviour of another person in the projection picture.

(1) Self-reporting

There are a number of arguments supporting the use of self-report, one being that information is received on a first hand basis from the participant. The self-concept is a personal, complex and private construct; no other way than a person's own reporting can be suitable to probe the self-concept. Further, most of the published construct validity and other psychometric research of the self-concept are done on self-report measuring instruments (Byrne, 1996: xix-xx), self-reporting is the most often used (Brinthaupt & Erwin, 1992: 138), and self-reportings of participants have been proven as accurate predictors of behaviour in many circumstances (Brinthaupt & Erwin, 1992: 139).

Challenges with self-reporting include: a somewhat developed level of language and reading skills is required when questionnaires are implemented (Botes, 1987: 71); participants must be capable and willing to make known their self-concept (Botes, 1987: 71); and participants might select socially acceptable statements to represent themselves, rather than giving responses which are really applicable to them (Hattie, 1992: 247; Meier, 1994: 42). Therefore, learners might give responses that they think the educator would like, or that they think are 'correct'. Finally, a certain level of distancing from the self is necessary to consider the possible responses during self-reporting (Botes, 1987: 19). Children often find such distancing difficult.

Different self-report methods are found, based on two approaches: the reactive and spontaneous approaches. The reactive approach requires participants to react on one or more criteria, previously identified by the researcher as important, by evaluating themselves on a scale, for example through semantic differential scales, or true or false items (Brinthaupt & Erwin, 1992: 147, 149). Traditionally, participant(s) are gathered in a group, given paper and a pencil, and presented with oral or written instructions (Brinthaupt & Erwin, 1992: 148). The social interaction between the researcher and the participants is limited to the minimum and is mostly indirect, such as in giving instructions (Brinthaupt & Erwin, 1992: 148), even through a fieldworker. The reactive approach is popular, as the data are easily handled, the questionnaires easily scored and the participants 'easily' compared (Brinthaupt & Erwin, 1992: 153).

The spontaneous approach, on the other hand, expects participants to respond in a minimally structured format to a general or vague stimulus, such as during an unstructured interview or open-ended questionnaire. Questions such as "*Tell me more about yourself*" are asked. Traditionally, the participants are given a verbal or written stimulus in an individual or

group situation, and the participants must answer orally or write in response to the stimulus (Brinthaupt & Erwin, 1992: 148). Sometimes restrictions are set regarding the time, length and response format (Brinthaupt & Erwin, 1992: 147). The social interaction between the researcher and the participant is more direct, especially during an individual interview. The researcher takes the place of the questionnaire, is physically closer to the participant and there is more opportunity for non-verbal information to be communicated (Brinthaupt & Erwin, 1992: 148). It is alleged that participants find it more difficult to give socially desirable responses with a spontaneous approach (Brinthaupt & Erwin, 1992: 152). Often, however, participants do not spontaneously tell everything about themselves: they do not usually share personal information with people, they regard some information as unimportant, or they do not recall the information in the more focused experience of an interview (Brinthaupt & Erwin, 1992: 150). In the reactive approach, the researcher is able to access such information through direct questions. The spontaneous approach is less popular than the reactive approach (Brinthaupt & Erwin, 1992: 147), being more time consuming to conduct and to analyse. It is also accepted that the spontaneous approach requires participants to have certain intelligence and verbal abilities (Brinthaupt & Erwin, 1992: 149-150).

The reactive and spontaneous approaches, however, are not mutually exclusive. When projection techniques are implemented, a picture is given to elicit responses from the participant, but the ways of responding are spontaneous. It is also possible that the reactive and spontaneous approaches can probe different aspects of the self (Brinthaupt & Erwin, 1992: 154).

Brinthaupt and Erwin (1992: 140) mentioned three factors that can influence self-reporting. The first is *accessibility and organisation of self-relevant knowledge*. Self-reporting involves memory (Brinthaupt & Erwin, 1992: 140). To evaluate the self, incidences and the influence of significant others must be remembered and presented. Only that which can be remembered, can be used during self-reporting. The second is *contextual, situational and cultural factors which can create expectations and give leads*. The context and situation wherein participants find themselves, can influence self-reporting. The academic self-concepts of learners who received poor test results on the day the questionnaires are completed, can, for example, be influenced by the poor results. The low academics self-concepts (ASCs) of those learners should then be seen in the context of the poor test results. Sometimes different situations elicit different self-reportings. Individual open-ended interviews conducted by an educator would probably have different results regarding ASC than ASC questionnaires implemented by an independent researcher. Different contexts and situations may make different aspects of the self prominent (Brinthaupt & Erwin, 1992: 144).

Triandis (1989: 514) and Markus and Kitayama (1991: 226-227) found that participants belonging to an individualistic culture probably share their self-perceptions during self-reporting, but that participants belonging to a collectivist culture probably share their selves in relation to others during self-reporting.

The third factor to influence self-reporting is *individual and developmental differences*. Participants with previous experience of self-reporting (Brinthaupt & Erwin, 1992: 146) will be more familiar with answering questionnaires than participants without similar experience. Older children have better reasoning and information processing abilities than younger children (Brinthaupt & Erwin, 1992: 145-146).

(2) Inferred self-concept

Arguments supporting data collection on self-concept by means of inference are: challenges regarding language and reading skills, willingness and the ability to self-report are largely ruled out when determining an inferred self-concept (Botes, 1987: 71); bias because of participants' cognitive abilities or motivation are also limited (Brinthaupt & Erwin, 1992: 138); and advocates of the inferred self-concept maintain that higher validity is found with alternative forms of measurement, such as educators assessing the self-concepts of learners and behavioural observation, than self-report measurements (Byrne, 1996: xix).

Challenges with an inferred self-concept include that an inferred self-concept does not necessarily refer to the same construct that self-concept questionnaires aim to measure. An inferred self-concept is not necessarily the same as the individual's self-concept, considering that people can act differently to what they think or feel about themselves, and that they can express their feeling through different actions. Self-reporting has to do with the unique perceptions of a person, regardless of the impression the person wants to make (L'Ecuyer, 1992: 100), and regardless of the style of expression and behaviour.

4.3.2 Questionnaires

The questions or items of a questionnaire can be structured or unstructured, meaning that the categories that the participant must choose from, can be specified or unspecified. A *structured item*, such as on gender, has specified categories, for example male and female (Wolf, 1997a: 422). Questions or items are dichotomous when there are two response categories and polytomous when there are more than two response categories (Byrne, 1996: 56). An *unstructured item* has an unspecified response, for example an item asking the participants how their weekend was spent (Wolf, 1997a: 422).

Questionnaires are a suitable medium to use with children, also with Grade Seven learners. There are a number of self-concept questionnaires for children, grounded on thorough research. In selecting an appropriate self-concept questionnaire, the target group must be kept in mind, and adaptations must be made to accommodate the context of the learners, as well as their HI (refer to Du Plessis, Bouwer & Grimbeek, 2001). Learners can be assured of their anonymity, which makes completing questionnaires acceptable to many learners. It is fairly easy to implement questionnaires in a school situation.

4.3.3 Projection methods

Projective techniques are generally used in mainly clinical contexts for descriptive and assessment aims. Projective techniques use a wide variety of symbolic, picture, verbal and expressive stimuli to elicit responses from participants. Most of the projective techniques use instruments for concealed assessment and the participants are seldom aware of the psychological interpretations that will be made. As the participants do not experience their responses as self-revealing, the responses are relatively free of distortion and information is given of which the participants may be unaware (Walsh, 1997: 954-955). The responses are then coded and interpreted by persons specifically trained for the work. The responses are regarded as indicators of covert, latent or unconscious aspects of the personality which are not revealed by responses on self-reporting instruments (Walsh, 1997: 954). Projective techniques utilise the process through which people unknowingly ascribe their own conscious and unconscious urges, needs, perceptions, feelings, aspirations, attitudes and behaviours to others, or give meaning to ambiguous or unstructured stimuli by making use of their own desires, fears, experiences, impulses, needs and conflicts dominant in their personality. Projection requires a screen to project on. The projection media can serve as such a screen (Kapp, 1991a: 44; Walsh, 1997: 954-955).

Projection pictures are often used with children of all ages in private practice (see Byrne, 1996: 248 for a projective technique for self-concept measurement of pre-school children) and are therefore assumed suitable for Grade Seven learners, including learners with HI, provided that communication can take place. The situation is not threatening to the learner and there are no right or wrong responses. The projection pictures as an instrument may be culturally strange to some of the learners, but during a previous study (Du Plessis, 1999: 52) the principal and educators indicated that the learners are used to answering questions relating to pictures. Projection pictures provide mostly qualitative data in contrast to the quantitative data provided by the ASC questionnaires.

Limitations of projection pictures include the following (L'Ecuyer, 1992: 129): it is a time-consuming method in implementing the pictures as well as analysing the content, often only a global image of the self is obtained and some aspects of the self are more fully discussed than others.

4.3.4 Observation

Researchers concerned about bias and inaccurate self-reporting of self-concept, can alternatively use behavioural observations. From the literature it can be concluded that the behaviour of learners with a high (academic) self-concept differs significantly from the behaviour of learners with a low (academic) self-concept (see Botes, 1987: 42, 115-120, 122; Meintjies, 1998: 12; Nthoba, 1999: 63,68; Scott *et al*., 1996: 289; Wiest *et al*.; 1998: 603). Based on learners' classroom behaviour and their behaviour in the school environment, learners can be identified as learners with high or low academic self-concepts (ASCs) or subject-specific ASCs (Botes, 1987: 20-21).

Observation by the educator has been successfully used in determining the ASC of Grade Seven learners (Du Plessis, 1999: 85-87), but the educators complained about extra work and time constraints. The researcher could do participatory observation and sit in the classroom to make the observations (Nthoba, 1999: 9), but the researcher did not have fluent knowledge of all the languages used in all the classrooms and found it difficult to connect dialogue with behaviour. Also, the researcher was not acquainted with the learners. It was, therefore, decided not to implement observation as a way to investigate the ASC of learners with HI.

4.4 RESEARCH DESIGN AND PROCESS

4.4.1 A mixed multi-method research design

No single research method can investigate all the characteristics of a phenomenon in a changing and complex reality. Each research method could by its data suggest a different interpretation of the phenomenon. By employing different research methods and collecting and integrating different kinds of data, qualitative and/or quantitative, bearing on the same phenomenon, the blend of strengths and advantages of different methods counterbalances the weaknesses and disadvantages of the others, thereby rendering an interpretation of the phenomenon which illuminates and exposes the phenomenon in a richly contextualised way.

This process is called methodological triangulation (Creswell, 2002: 561, 564-565; Denzin, 1997: 318, 319; 321; 322; Zeller, 1997: 828). According to Denzin (1997: 319) and Zeller (1997: 827) interpretations that rely on triangulation would be stronger than interpretations that rely on a single method.

The research design addresses the aim of the study, namely to investigate the ASC of learners with HI in special and full-service inclusion school contexts. Quantitative data, to measure, describe and analyse the nature of the ASC of learners with HI in the two school contexts, including its strength and direction, will be augmented with qualitative data, to further explore the nature of the relation between the ASC and HI in the two school contexts, more specifically in respect of the dynamics. The research design is, therefore, both a multi-method and mixed method design, as both quantitative and qualitative data from different sources are combined (Creswell, 2002: 560).

The research design developed pragmatically and the course of the development is noted in Appendix A. The text refers to appropriate parts of the appendix to indicate where, why and how changes in the design had to be made to accommodate circumstances in the field.

4.4.2 Sample selection steps

(1) Schools

The co-ordinator of the Education Support Services of a school district implementing inclusive education and participation policy in Pretoria, South Africa, identified several *full-service inclusion schools* in different socio-economic contexts. After a survey to select the barrier of impairment to be researched, two of the schools were approached to participate in the research (refer to A1 in Appendix A). The schools were situated in directly contrasting socio-economic contexts. One school, a predominantly white Afrikaans school, could be described as a historically advantaged white school, and the other, which had a majority of Sepedi speaking learners, as a historically disadvantaged black school. Many people, advocates and opponents of inclusive education alike, are of the opinion that abundant resources are required successfully to implement an inclusive education and participation policy. By including schools from radically different socio-economic contexts, more information regarding the accuracy of the position can be obtained. Additionally, multiple perspectives represent the complexity of the inclusive education and participation practice in South Africa (based on Creswell, 2002: 194). Creswell referred to purposeful sampling in which the researcher samples cases that differ on some characteristic, such as socio-economic context, as *maximal variation sampling* (Creswell, 2002: 194). To prevent

differences in provincial policy and policy implementation from influencing the data, other provinces and districts were not approached. Much variance is already present in respect of situation dynamics at schools, and the data should not be complicated further by additional variables.

For purposes of comparing the ASC of learners with an impairment in special and full-service inclusion schools with the ASC of learners in *regular schools* (refer to A2 in Appendix A), the co-ordinator of the Education Support Services who identified the full-service inclusion schools, was requested to identify and select the same number of context-similar regular schools as the full-service inclusion schools participating in the research.

A survey at the selected full-service inclusion schools indicated that each school accommodated a learner with HI in Grade Seven; hence the *special school* for learners with HI in the district was selected as the special school to participate in the research (refer to A3 of Appendix A).

In summary, five Grade Seven classes, one each in the following five schools, were involved in the research: two full-service inclusion schools, each school situated in a directly contrasting socio-economic context; two regular schools, each school corresponding to a full-service inclusion school in terms of a particular socio-economic context, and one special school for learners with HI.

(2) Impairment

Two mutually dependent processes operated in the selection of a particular barrier of impairment for the research focus. Firstly, the types of special schools in the particular district and the barriers of impairment accommodated by them would determine a barrier of impairment to involve in the research. Because the field of study was restricted to a single district, only barriers of impairment which were accommodated in special schools in the district, were considered. Secondly, once the district had identified the full-service inclusion schools, a survey of the barriers of impairment at the schools would indicate the barriers of impairment found among the Grade Seven learners, and, hence, the barriers of impairment to be considered for the research (refer to A3 in Appendix A).

(3) Learners

Grade Seven learners were selected to participate in the research. Several reasons led to this decision. Research by Schollar (personal communication, 1997) showed that Grade Seven learners understood the self-concept better than younger learners. In confirmation, a

study done by Le Roux (1999: 227) indicated that the ASC contributed the most in the proportion of variance of the total self-concept of the Grade Seven learners. Le Roux speculated whether Grade Seven learners might have a more realistic evaluation of their selves than learners in lower grades (Le Roux, 1999: 228). A previous study successfully involved learners in Grade Seven (Du Plessis, 1999). Also, diagnostic instruments to assess the ASC of learners in Grade Seven in different ways existed in rudimentary forms.

A class of learners, containing the learner with HI, was purposively selected from each of the two participating full-service schools. All the learners with HI in the Afrikaans class in the special school were selected. (The class also accommodated learners with learning impairment.) Learners from the English speaking class were not selected, as no other English-speaking learners participated in the study. There was not a class containing Sepedi-speaking learners in the special school. One class of Grade Seven learners was selected in each of the two regular schools for purposes of comparing the ASC. These two classes were selected by the principal of each school and could be considered a convenience sample. The criterion for exclusion of learners was barriers of impairment other than HI.

4.4.3 Data collection

Data were collected by using quantitative research methods (survey to investigate the BLP at the participating schools, ASC questionnaires and achievement scores of all the participating Grade Seven learners) and qualitative research methods (non-participatory observation of the learners in the selected classrooms, interviews with the principals, educators and learners, and background information of the learners with HI). The third school quarter was devoted to data collection.

(1) Quantitative data collection methods

A self-developed *survey* format (Appendix B), based on the EWP 6 categories of BLP (Department of Education, 2001: 17-20), was implemented to analyse the incidence and degrees of severity of BLP, including barriers of impairment, experienced by the learners in each school across the two school contexts, to indicate the particular barrier of impairment to be focused on in the research.

Based on existing items in a locally developed self-concept questionnaire (Le Roux, 1983a, 1983b) and an internationally developed self-concept questionnaire (Hattie, 1992: 162-163), an ASC *questionnaire* (ASCQ) was developed to investigate the ASC of the learners in the

different school contexts. The ASC of all the Grade Seven learners participating in the research was determined by administering the ASCQ in the middle of the school year, when enough time had elapsed for the ASC to reflect the influence of the school context. Questionnaires were in the language in which the learners were most proficient, namely Afrikaans and Sepedi. Each questionnaire contained a section on general ASC (GASC), first language ASC (LASC) and mathematics ASC (MASC) (refer to 4.8 for the principles and process of developing the ASCQ).

Throughout the year, *learner achievement* in class influences ASC. The results of an objective norm-based test, implemented once during the year, would not portray the class achievements that continually influence the ASC during the year. Therefore, learner achievement, collected as scores allocated for different learning areas, for each learner in the sample, was collected (refer to 4.10 for the principles and process of using achievement percentages).

Audiograms of the learners with HI were collected to enhance understanding of the particular barriers each learner with HI faced in the classroom situation (refer to 4.10 for the principles and process of using audiograms).

(2) Qualitative data collection methods

Interviews took place with principals, relevant Grade Seven educators and some Grade Seven learners. Interviews with the principals of the full-service inclusion and special schools contributed information on the process of implementing the EWP 6 policy in the full-service inclusion and special schools by individual, semi-structured in-depth interviews using pre-set, open-ended questions (refer to 4.11 for the principles and process of developing interview schedules).

It was assumed that the understanding and acceptance of the EWP 6 by the educators who taught the learners with HI would influence their classroom practice which, in turn, could play an important role in the ASC. The class, first language and mathematics educators were interviewed. At the start of the fieldwork at the full-service inclusion and special schools, the educators' knowledge, self-perception of skills and values in respect of inclusive education and participation, as presented in the EWP 6, were determined by individual, semi-structured in-depth interviews using pre-set, open-ended questions. Upon completion of the fieldwork, information about their classroom experiences was collected through a second interview, in verification of the interpretation of the classroom observations (refer to 4.11 for the principles and process of developing interview schedules).

Information was collected from the learners with HI, as well as other learners where the classroom observations indicated a need for further investigation. An interview strategy was adapted for learners in Grade Seven and took the form of administering projection pictures. The 'interview' addressed their experiences in the school and their ASC and verified the classroom observations (refer to 4.12 for the principles and process of developing projection pictures).

In the selected full-service inclusion and special schools, *non-participatory observation* of the first language and mathematics periods of the sampled Grade Seven classes took place according to a rotating schedule. The educators, their facilitation of learning, the behaviour of selected learners and the interactions taking place in the classrooms were observed. Where necessary, a Sepedi-speaking culturally congruent fieldworker acquainted with the culture of many of the learners in the classroom assisted with observations and explanations of the classroom interactions (refer to 4.13 for the principles and process of making classroom observations).

To gain some understanding of what might have contributed to their present ASC, *background information* was compiled of all learners with HI in the special and full-service inclusion schools. The background information included relevant family, school and health information, school reports available and examples of schoolwork done during the year in which the research was conducted (refer to 4.14 for the principles and process of compiling background information).

4.4.4 Pilot study

The Afrikaans and Sepedi versions of the ASCQ and the interview schedule with the educators were piloted. The ASCQ was piloted in other Grade Seven classes of the research schools to control for variables as far as possible. One of the Grade Seven classes in the Afrikaans full-service inclusion school, not the class that would participate in the main study, and two Grade Seven classes in the Sepedi full-service inclusion school, neither one the class that would participate in the main study, were involved in the pilot study. The classes in the Sepedi school were heterogeneous in containing mother tongue speakers of Sepedi, Zulu and Tsonga, amongst others. In order to involve an adequate number of learners in the pilot study for the Sepedi version of the ASCQ, the Sepedi speaking learners from two classes were combined. Results of the pilot study which proved to be highly relevant are discussed in 4.9. All the relevant learners in both schools were given letters of

permission to be signed by their parents or guardians before they could participate in the pilot study (refer to 4.15 for ethical principles adhered to during the research).

It was not possible to pilot the ASCQ with learners with HI, as no additional Grade Seven learners with HI, besides the learners already selected for the study, were identified in the district. Therefore, the implementation of the ASCQ with learners with HI was discussed with the Afrikaans and mathematics educators at the special school for learners with HI. (The Afrikaans and mathematics educators were already involved in the study through participation in interviews and classroom observations.) The Afrikaans educator recommended allowing extra time, but the mathematics educator was not concerned about the learners with HI answering the same questionnaire as learners without HI, as she estimated their questionnaire answering skills and comprehension skills to be on par with those of other learners. The results of the pilot study regarding the ASCQ are discussed in 4.9.

Only the interview schedule of the first interview with the educators was piloted. It was argued that although similar questions were asked, each interview would run its own course. Projection pictures were piloted and administered during a previous study (Du Plessis, 1999: 73) and only slightly adapted to reflect the reality of the classrooms of the learners in the current study.

The first observation of a class in each learning area at each school was considered as a pilot observation, thereby maximising exposure of the relevant learners to the researcher. Because of the possible influence the researcher as observer could have on the learners and the educators, the data on the first observation of each learning area in a school would be carefully scrutinised, to account for possible observer influences and distortion, and thus for validity and reliability.

4.4.5 Data analysis and interpretation

The results of the ASCQ underwent descriptive, validation, reliability and factor analyses. The transcripts of the interviews and observations, field notes and background information were analysed for recurring themes, school context, inclusive education and participation policy implementation, support procedures, classroom practices that facilitate learning for learners with HI and the ASC of the learners with HI.

To examine the ASC of learners with HI, quantitative and qualitative relationships and comparisons of data in the special, regular and full-service inclusion schools were determined by using the measurements of the ASC, and enriching the findings with classroom observations, educator and learner interviews and background information. An examination of the ASC of learners with HI would finally give judgement on the applicability of the ASC to indicate success in the conversion of primary schools to full-service inclusion schools. It was envisaged that principles of good full-service educational practice might be inferred that could underpin guidelines to improve the provision, processes and/or outcomes of the conversion of primary schools to full-service inclusion schools in order to maintain and/or enhance the ASC.

4.5 VALIDITY AND CREDIBILITY

Validity is essential for any successful scientific study (Zeller, 1997: 822). In quantitative research, the validity of a measuring instrument relates to the evidence that can be assembled to defend the interpretations made from the scores of the instrument as appropriate, meaningful and useful (Creswell, 2002: 183; McMillan & Schumacher, 2001: 181, 239). Such evidence can include the reliability of the instrument, the defensibility of the meanings attached to the scores and, most importantly, the consequences of the interpretations of the test scores. The extent to which the content of the items of a measuring instrument corresponds with and is representative of the content of the construct that it is supposed to measure (McMillan & Schumacher, 2001: 240-241; Zeller, 1997: 824) can be part of the evidence used to defend the interpretation of the test scores.

A critical aspect of validity concerns the evidence that supports the relationship between the measurement scores and the way the theory anticipates the relations between the measurement scores (Zeller, 1997: 825). In respect of the ASCQ, this would involve clear specifications of a model of self-concept and the anticipated relationships between the various self-concepts, the quality of the indicators chosen to represent the self-concepts, the dimensionality of the indicators, and the choice of a response scale, such as a Likert scale (Zeller, 1997: 825-826). Should the expected pattern of correlations not emerge, there is one or more of at least four possible explanations: the indicators do not measure the concept which they are supposed to measure, the theoretical arrangement of the concepts was wrong, wrong procedures to infer the hypothesis from the theory were followed, and/or the indicators of the concept do not have construct validity (Creswell, 2002: 184; Zeller, 1997: 827). Zeller (1997: 827) mentioned that construct validity is established during the course of time and with lots of research. Byrne (1996: 67) warned that, considering the inevitability of

social change, determining construct validity should be a continuous process to which any measuring instrument, regardless of age and status, should regularly be subjected.

Construct validity involves two types of inquiry: the validation of a theory and the validation of a measuring instrument (Byrne, 1996: 42). In *validation of a theory* the researcher seeks empirical proof to support the hypothesised construct relations between facets of the same construct (intra construct studies) and between different constructs (inter construct studies) (Byrne, 1996: 42). Intra construct studies investigate the internal structure of the self-concept, such as the different dimensions (Byrne, 1996: 115; Hattie, 1992: 6; Shavelson *et al.*, 1976: 416). Inter construct studies attempt to indicate that the self-concept as a construct can be discerned from other constructs, for example academic achievement, and that the self-concept can relate to such other constructs (Byrne, 1996: 115-116; Hattie, 1992: 6; Shavelson *et al.*, 1976: 415). In *validation of a measuring instrument* the researcher seeks empirical evidence that the instrument does indeed measure that which it is supposed to measure (Byrne, 1996: 42-43). When a measuring instrument consists of several subscales, construct validity of the instrument is proven when the subscales show a factor structure which corresponds with the underpinning theory (Byrne, 1996: 42-43). The two processes, validation of a theory and validation of a measuring instrument, are therefore complementary (Byrne, 1996: 43). Therefore, a researcher can either validate a theory by creating good measuring instruments, or validate measuring instruments by basing them on solid theory (Byrne, 1996: 43, 240). In this study the latter option was followed.

Similar to quantitative research, it is argued that the validity of qualitative research relates to the evidence that can be assembled to defend the interpretations made from the results as appropriate, meaningful and useful. Similarly, such evidence can include the reliability of the data (precision), the defensibility and acceptability of the meanings attached to the findings, and the usability and consequences of the findings (Henning *et al.,* 2004: 146-150).

One way to ensure appropriate, meaningful and useful interpretations, is to ensure that the researcher and participants share mutual meanings in respect of the data (McMillan & Schumacher, 2001: 407). Mutual meanings can be enhanced by any combination of the following strategies in respect of data collection and analysis techniques: prolonged field work, multi-method strategies, participant verbatim language, low-inference descriptors, multiple researchers, mechanically recorded data, participant researcher, member checking, participant review and negative cases (Creswell, 2002: 280; McMillan & Schumacher, 2001: 407-410). In this study, multi-method strategies, participant verbatim language, multiple researchers (fieldworker), mechanically recorded data, participant review and negative cases

were employed to enhance validity of the qualitative research. When the results approximate reality, credibility has been achieved (McMillan & Schumacher, 2001: 166).

4.6 RELIABILITY

Reliability refers to the extent to which measurements of a measuring instrument are consistent across the items or stable over time (Anderson, 1997: 892; Byrne, 1996: 38-9; Creswell, 2002: 180; McMillan & Schumacher, 2001: 244; Zeller, 1997: 823). The consistency of measurements is indicated by the reliability coefficient, often indexed by coefficient alpha, and it is desirable that such estimates of reliability exceed .8, or at least .7 (Creswell, 2002: 182; McMillan & Schumacher, 2001: 245, 248). Reliability of a questionnaire is a prerequisite for validity of the questionnaire, although the inverse is untrue (McMillan & Schumacher, 2001: 250).

Some qualitative researchers are of the opinion that one cannot achieve reliability in qualitative research, but that one must strive for trustworthiness in research. For others, reliability is subsumed in the process when striving for validity (Henning *et al.,* 2004: 151) (refer to 4.5) and could be said to refer to "*precision is all*" (Henning *et al.*, 2004: 147). Precision includes accurate and detailed dealing with responses of participants, and precision in procedures and documentation, whereby the research becomes potentially replicable (Henning *et al.*, 2004: 151). Reliability as precision then relates to the concept 'authenticity', which is the faithful reconstruction of participants' multiple perceptions (McMillan & Schumacher, 2001: 415). In reconstructing data, the qualitative researcher must acknowledge his or her subjectivity and ensure a disciplined subjectivity through methodological strategies, such as peer debriefing and field journal keeping, which require meticulous self-scrutiny, also known as reflexivity (McMillan & Schumacher, 2001: 411-414). The part that a culturally congruent fieldworker plays in faithfully reconstructing data, contributes greatly to reliability and authenticity in the study. Reliability and authenticity can be linked to an important component of a quantitative understanding of reliability, namely consistency. Consistency in qualitative work lies in the internal logic and cohesion of the findings (Henning *et al.*, 2004: 151).

The aim is not to generalise findings from qualitative research, but to reflect the multiple perspectives and the unique context(s) of the research, thereby providing for the extension of findings, which facilitates understanding of similar situations and application of the findings in subsequent research or practical situations (McMillan & Schumacher, 2001: 414).

4.7 DIFFERENCES IN LANGUAGE AND CULTURE

Differences in language and culture between the researcher and the participants can potentially influence the validity (credibility) and reliability (trustworthiness) of the research, by barring the way to ascribing mutual meanings. All cultural groups have their own conscious knowledge made up of the personal, interpersonal and nonpersonal meanings of the group. With questionnaires, the risk is often that the participants of a different culture and/or language do not understand or misunderstand the questions. During interviews and observations, the risk is increased when both the researcher and the participants can misunderstand or fail to understand questions, responses and non-verbal cues and behaviours. The researcher, belonging to another culture, may finally interpret the data according to his or her culture, thus leading to unreliable and invalid conclusions. For example, Markus and Kitayama (1991: 248) showed that researchers cannot assume that the same word in different cultures refers to the same emotional experience. It was decided to minimise the possible effects of differences in language and culture by employing a culturally congruent fieldworker[1] to implement the questionnaires, assist with the interviews, observations and projection pictures where applicable, and to consult with during the interpretation of data.

The possible effects of differences in language and culture when using questionnaires can be minimised by accommodating the questionnaire administration procedure and by rigorously attending to technical aspects during the translation process. In respect of the *questionnaire administration procedure*, the following was done. By ensuring that the questionnaire instructions were clear and self-explanatory, the researcher would have to rely less on verbal communication (based on Hambleton & Kanjee, 1997: 966). It could not be expected of Grade Seven learners, however, to complete a questionnaire without some guidance. Some participants in South African schools are not used to completing questionnaires. In the Afrikaans schools, the researcher, who is Afrikaans speaking, administered the ASCQ and in the Sepedi schools the ASCQ was administered by the culturally congruent fieldworker, who comes from the community, is familiar with the culture,

[1] An MEd (Educational Psychology) student, Mr Ramodungoane Tabane, who was doing his internship at the Department of Education, was identified as a culturally congruent fieldworker. Eventually the fieldworker's research for his MEd dissertation dovetailed with the work done in this study, and a rich symbiosis developed between the two researchers. Mr Tabane's research topic concerns the generation of data during cross-cultural interviews. Briefly, the research design for his dissertation entailed attending all interviews for this study, following up in a second interview phase on data which emerged during the interview and which might be culturally related, and comparing the interview transcripts of the researchers representing the different cultures for hints of influence on data generation because of the culture of the interviewer.

language and dialect of the participants, has adequate questionnaire administration skills and experience, and who had had exposure to the administration procedure (based on Hambleton & Kanjee, 1997: 966). Further, because learners from different cultures might not be equally familiar with particular item formats, practice examples were provided and monitored (based on Hambleton & Kanjee, 1997: 966).

There are several reasons for *translating* existing questionnaires. Rather than developing a new instrument for participants of another language, besides financial and time advantages, translated questionnaires allow comparative studies among schools of different languages and cultures (Hambleton & Kanjee, 1997: 965-966).

Forward translation takes place when translators translate the measuring instrument from the original to the target language. Another group of translators then assess the equivalence of the two versions. Revisions are then made to the version in the target language to correct problems identified by the translators (Hambleton & Kanjee, 1997: 968). The best known and most popular way of translating research instruments is back translation. Translators translate the measuring instrument from the original to the target language. A second group of translators take the translated instrument (in the target language) and translate it back to the source language. The original and back-translated versions are then compared and assessed regarding their equivalence. If the versions appear similar, it confirms the equivalence of the translations. During back translation the quality of the translation into the target language can be monitored (Hambleton & Kanjee, 1997: 968). Back translation does not provide sufficient proof to support the use of the translated instrument in practice. Back translation is only one of the types of proof needed to confirm the equivalence of the translations (Hambleton & Kanjee, 1997: 968); however, back translation is recommended for small-scale cross-cultural studies (Hambleton & Kanjee, 1997: 968).

A shortcoming of back translation is that the comparison of the translations takes place in the source language. Therefore, it is possible that the translation in the target language is a poor translation, if, for example, the grammatical structures of the source language are retained. Such a translation will make the back translation easier and enhance equivalence between the translations, but poor translation in the target language remains hidden (Hambleton & Kanjee, 1997: 968). The culturally congruent fieldworker was able to identify poor translations and make suggestions for improvement.

Various aspects of instrument development, such as the choice of item format and stimulus material, basic vocabulary, sentence structure, general expressions and other aspects of the

questionnaire that would be difficult to translate, were kept in mind when developing the ASCQ in Afrikaans and Sepedi (Byrne, 1996: 50, 98; Hambleton & Kanjee, 1997: 967). Sentences in the passive voice and sentences with double negation (as found in Afrikaans) were also avoided as far as possible.

Dialects within a language can influence the validity of measuring instruments. During the translation process the researcher must decide whether the particular dialect is important, or whether the aim is to create a measuring instrument that can be used by all the dialects in a language (Hambleton & Kanjee, 1997: 967-968). Although the Afrikaans and Sepedi languages were kept as pure as possible to increase the applicability of the questionnaires in other schools, words of an Afrikaans and Sepedi vernacular, which were well known to the learners, were used where deemed necessary.

Sometimes words and expressions do not have equivalent versions in the target language, or do not exist at all in the target language. Decentering involves adaptations in the original instrument so that equivalent words and expressions can be used in the source and target language. Decentering works well when an instrument and its translated version are developed simultaneously (Byrne, 1996: 50; Hambleton & Kanjee, 1997: 967-968). (Refer to the pilot study in 4.9 when frequency categories had to be adapted to ensure comprehensibility in Afrikaans and Sepedi.)

4.8 THE DEVELOPMENT OF AN ASC QUESTIONNAIRE FOR GRADE SEVEN LEARNERS, INCLUDING THOSE WITH HI: PRINCIPLES AND PROCESS

Firstly, the development of a questionnaire requires that the *variables* must be identified. Research questions, theories, previous research and discussions with experts can give direction in this regard (Wolf, 1997a: 423). Discussions about the research topic with people representing the group to complete the questionnaire, can also cast light on variables (Anderson, 1997: 888; Byrne, 1996: 105). Once identified, the variables must be formulated in question format (Wolf, 1997a: 423). It was decided to make use of existing ASC questionnaires in order to make a research contribution to the application of questionnaires across educational contexts. Local and international ASC questionnaires (Le Roux, 1983a, 1983b; Marsh, 1990 in Marsh & Yeung, 1997b: 698; Mboya, 1993, 1994a, 1994b; Hattie, 1992: 162-163) were evaluated to select the most appropriate ASC questionnaire. The study used academic self-concept variables and questions identified by the Song and Hattie Questionnaire (Hattie, 1992: 162-163) and the Self-concept Scale for Primary School Pupils (SSPS) by Le Roux (1983b). Each question can implicitly or explicitly be connected to the

ASC. To ensure that the learners understood the questions and gave valid and reliable responses, the questions were formulated in the language which the learners presumably understood best and could use best. In most cases that would be the first language of the learner; therefore, the ASCQ was developed in the first languages of the learners, namely Afrikaans and Sepedi.

Wolf (1997a: 423-424) suggested that a *pilot study* be done on a number of participants (between 30 and 50) who are representative of the group involved in the study. The questionnaire used during the pilot study often contains more questions than the final questionnaire, considering that the best questions will be selected from the pilot study. Based on the information obtained from the pilot study, items are now selected and refined and adaptations are made. If non-responses make up more than 5% of the sample, it is usually indicative of ambiguities in the items or inadequacies in the response categories (Wolf, 1997a: 425). If necessary, further adaptations should be made. The final questionnaire should not take longer than 30 minutes to complete, preferably 15 to 20 minutes (Wolf, 1997a: 425). Long questionnaires can lead to participant fatigue and/or insufficient cooperation, which may lead to careless and inaccurate responses (Wolf, 1997a: 422-423). The final ASCQ took approximately 45 minutes to implement, because of the adapted administration format for learners with HI. The results of the pilot study can be found in 4.9.

The *layout* of the questionnaire was also considered. The layout supports the participant to complete the questionnaire, by attending to aspects such as font size, sequencing of items and adequate spacing for responses (based on Wolf, 197a: 424).

Certain *developmental factors* were considered in developing the ASCQ. With self-reporting, the participant must be able to understand the questions or items and response categories correctly and to respond appropriately. A basic level of cognitive functioning and language and reading skills are necessary (Byrne, 1996: 56; Byrne *et al*., 1992: 197; Hattie, 1992: 238, 240). Byrne (1996: 57) even recommended that the reading skills of learners be assessed before implementing a self-reporting questionnaire. In this study, the items on the questionnaire were stated as simply as possible to ensure readability and comprehension. Additionally, the items were read aloud, with the participants following on their questionnaires, to control for reading ability as a variable. The attention span of the participants was also kept in mind during the development of the questionnaire, as a poor or fluctuating attention span can lead to response bias, especially with young children and participants who have cognitive limitations (Byrne, 1996: 57). By limiting the number of

questions, and thereby the duration of the questionnaire, not only the effect of a short attention span, but also possible fatigue and boredom can be counteracted (Byrne, 1996: 58; Meier, 1994: 48). The memory abilities of the participants were also considered during the development of the ASCQ. Only that which the participant can remember, will be portrayed during self-reporting. Considering that recent events are often more accessible than events of the more distant past, self-reporting can easily be biased (Byrne, 1996: 58).

Participants must understand the *response formats* (Brinthaupt & Erwin, 1992: 149). The inclusion of a neutral response option, for example '*I don't know*', '*Uncertain*' or '*Sometimes*' is debatable (Anderson, 1997: 893; Andrich, 1997: 879; Keats, 1997: 760). On the one hand, the participant can truly not know or be unsure. On the other hand, a neutral option can be a useful alternative if participants do not want to reflect their true feelings or attitudes, or do not understand the question (Anderson, 1997: 893; Andrich, 1997: 879). Some researchers are of the opinion that the number of unanswered items in the questionnaire increases when the neutral option is left out (Anderson, 1997: 893). In the current study, the ASCQ required participants to assess themselves on a time scale, namely never, a few times, sometimes, many times and always. The values 1, 2, 3, 4 and 5 respectively were allocated to the response options.

The decision to use five frequency categories of time in the ASCQ merits discussion. Some participants find it difficult to differentiate among more than three to five response options (Anderson, 1997: 892-893). Most participants feel more comfortable to assess themselves on a three-point continuum than on a two-point scale (Ashmore & Ogilvie, 1992: 259). In practice, two to twenty different response options are found. The greater the number of options, the more sharply the participants have to be able to differentiate and the more clearly the response options have to be circumscribed. The reliability increases as response options increase up to maximum of seven. Then reliability reaches a plateau. A decision on the number of response options depends on the nature of the assessment task and the training given to the participants (Wolf, 1997b: 962). An even number of response options prevents overuse of the middle '*uncertain*' option, but deprives the participant of a valid option. An uneven number of response options sometimes leads to misuse of the middle '*uncertain*' option. With five options, it was decided participants could have a middle option and a big enough variety of response options.

The validity of self-reporting is often threatened by *response bias*, that is to respond to items in such a way that the responses do not relate to the participants' true perceptions of themselves (Brinthaupt & Erwin, 1992: 151-152; Hattie, 1992: 164). Response bias occurs

when some participants may want to avoid inadequate aspects of themselves, make a certain impression and/or postpone rejection (Hattie, 1992: 164). In this study, bias might have occurred if the learners did not believe that the results would be treated confidentially and if they felt they had to create a favourable impression of themselves and their educators. Unfamiliarity with the questionnaire format and cultural factors that compel learners to respond in a particular way may also contribute to bias.

Three general forms of response bias can be found: acquiescence, social desirability and extremity bias (Moskowitz, 1986: 307-308). Acquiescence is the tendency of participants to respond compliantly to questions or items in a questionnaire or interview, regardless of their own beliefs (Meier, 1994: 56). (On the other hand, some participants tend to respond unfavourably on all the items (Meier, 1994: 56)). Bias because of acquiescence can be countered by balancing positive and negative statements (Byrne, 1996: 59). For example, if participants must assess themselves on statements such as '*I do well in Mathematics*' and '*I do poorly in Mathematics'* by using a scale from 1 (never) to 5 (always), and they want to respond that they do well, they will have to select 5 for the first statement and 1 for the second statement to be consistent (Anderson, 1997: 893; Byrne, 1996: 103). Such statements are placed randomly in the questionnaire (Anderson, 1997: 893). Pre-adolescent children and children with poorer reading skills, however, are unable to respond appropriately to negative items, with the result that bias develops precisely because of the negative items (Marsh, 1986a: 45). Marsh (1986a: 47) also found that responses of older learners to negative items did relate to the responses to the positive items. The bias that can develop because of negative items correlates significantly with verbal ability. A statement with a negative connotation, for example '*I do poorly in Mathematics*', is better understood than a negative statement, for example '*I do not do well in Mathematics*' (Marsh, 1986a: 48).

Social desirability is the tendency of participants to respond to items in a questionnaire as they think the questionnaire administrator or community expects them to, regardless of their own beliefs (Anderson, 1997: 893). The gender, age, race and social status of the questionnaire administrator can influence the participants in this regard. Methods to manage bias because of social desirability are complex. One way to decrease socially desirable responses is by disguising the aim of the measuring instrument and the nature of the expected responses (Anderson, 1997: 893).

Extremity bias is the tendency of participants consistently to choose the extremities on a scale, such as consistently selecting the 1 or 5 on a five-point Likert scale (Byrne, 1996: 61). It is difficult to discern whether the selected extremities reflect the choice of the participant or

extremity bias. Extremity bias cannot be corrected by balancing positive and negative items, as both ends of the scale are affected (Byrne, 1996: 61).

Some participants maintain an impulsive response style and respond to items without any consideration (Meier, 1994: 56). By reading the instructions and items to the learners participating in this study, the effects of an impulsive response style will probably be minimised.

For insight in the selection and composition of items for the ASCQ used in the study, refer to Appendix C. The final questionnaire is found in Appendix D. A manual was written to manage questionnaire administration (refer to Appendix E for an English version of the manual).

4.9 RESULTS OF THE PILOT STUDY

4.9.1 Orientation

The pilot study of the ASCQ firstly aimed to establish the formulation of the frequency categories of time for the range of response options, which would be understood by most of the learners. The pilot study of the ASCQ secondly aimed to establish the format of the response sequence that would be most reliable and, thirdly, the reliability of each item under consideration for the ASCQ.

4.9.2 Formulation of the frequency categories of time

For the range of response options, the formulation of the frequency categories of time which would be understood by most of the learners had to be established. In both Afrikaans and Sepedi, three mixed order sets of frequently used, but different, words were compiled, that seemingly obviously distinguish among the frequency categories of *never*, *seldom*, *sometimes*, *often* and *always.* In each pilot class of learners, the learners were requested to arrange the three mixed-order sets systematically, every time starting with the word that means *never* and ending with the word meaning *always*. Table 4.1 contains the results of the Afrikaans speaking learners (N = 31) who participated in the Afrikaans pilot study.

Table 4.1 Variations and correct arrangements of mixed order Afrikaans formulations of frequency

Set	Number of participants	Variations	Correct arrangements	% Correct arrangements
1	31	17	7	22.58
2	31	13	11	35.48
3	31	14	15	48.39

The first mixed-order set yielded 17 variations. The large number of variations and the small number of correct responses suggest considerable confusion amongst the learners as to what the words in Set 1 really mean. Only 7 learners (22.58%) had the sequence correct (*Nooit, Selde, Soms, Dikwels, Altyd*). This was a finding of considerable importance for increasing both the validity and reliability of the ASCQ, since this set of terms is generally assumed to be clearly understood by one and all and is commonly seen in questionnaires. The second set yielded 13 variations, with 11 (35.48%) correct responses (*Nooit, Min kere, Partykeer, Dikwels, Altyd*). Set 3 yielded 14 variations, with 15 (48.39%) correct responses (*Nooit, Min kere, Partykeer, Baie kere, Altyd*), and was accepted as the formulation of the frequency categories of time to be used in the pilot and final versions of the ASCQ. Verbal explanations of the words were nevertheless included in the instruction manual of the questionnaire, in view of the fact that 51.61% of the pilot sample had failed to arrange this set correctly.

The results strongly suggest that the use of the term *keer/kere* (English: *time* as in *a few times*, *sometimes*, *many times*) clarifies understanding of frequency, since Set 3, containing *keer/kere* most, was arranged correctly by most participants. This raises the possibility that substituting *nie eers een keer* (English: *not even one time*) and *elke keer* (English: *every time*) for *nooit* (English: *never*) and *altyd* (English: *always*) may have further contributed to validity and reliability.

The compilation of three sets of Sepedi words denoting frequency was more challenging than the Afrikaans version. Apparently, Sepedi has even less distinction among the meanings of the various words, which clearly showed in the results. Inputs from the translator, the culturally congruent fieldworker as well as a Sepedi educator from a participating school were used in compiling the three sets of words, in what became an exercise in decentering (refer to 4.7). Table 4.2 contains the results of the Sepedi speaking learners (N = 46 and 51) who participated in the Sepedi pilot study.

Table 4.2 Variations and correct arrangements of mixed order Sepedi formulations of frequency

Set	Number of participants	Variations	Correct arrangements	% Correct arrangements
1	46	26	3	6.52
2	51	29	1	1.96
3	51	32	1	1.96

The first set yielded 26 variations, reflecting the high degree of confusion of terms amongst the learners, with only 3 (6.52%) correct responses (*A šinki, Ganyane fela, Nako engwe, Gantshi, Nako tšohle*). The second and third sets yielded 29 and 32 variations respectively, each with only 1 (1.96%) correct response (*Aowa, Ga mmalwa, Nako engwe, Kgafetsakgafetsa, Nako tšohle* and *Ga go bjalo, E seng gantshi bjalo*, *Nako engwe*, *Gantshi, Nako tšohle* respectively*).*

None of the sets by far therefore elicited enough unambiguous responses. An analysis was consequently made of how many learners were correct in respect of each individual word meaning *never*, *seldom*, *sometimes*, *often* and *always* in each of the three sets, as indicated in Table 4.3.

Table 4.3 Correct response choices for individual Sepedi formulations of frequency

Word meaning …	Set 1 (N=46)	%	Set 2 (N=51)	%	Set 3 (N=51)	%	Sepedi word selected
… never	33[2]	71.74	**34**	66.67	14	27.45	Aowa
… seldom	7	15.22	**25**	49.02	5	9.80	Ga mmalwa
… sometimes	15	32.61	**20**	39.22	13	25.49	Nako engwe
… often	**10**	21.74	9	17.65	5	9.80	Gantshi
… always	**11**	23.91	9	17.65	4	7.84	Nako tšohle

[2] An unfortunate mistake was picked up only after completion of the whole study: When the number of correct responses were expressed as a percentage of the number of learners participating in each set, it could be seen that the *never*-word in Set 2 had been incorrectly assumed to be chosen by more learners than in Set 1. *A šinki,* in Set 1, had actually elicited more correct responses than *Aowa,* in Set 2. It might be added that both words were understood by at least two thirds of the learners, indicating that both words were fairly well known. Further, *A šinki* was considered to be more of a slang expression than *Aowa*. Since the administration of the ASCQ included an explanation of the words used as frequency categories, the error has hopefully not impacted significantly on the reliability of the ASCQ in Sepedi.

The *never*-word positioned correctly most often (34 - 66.67% correct positionings; see footnote in Table 4.3) was contained in Set 2, as well as the *seldom*- and *sometimes*- words (25 – 49.02% and 20 – 39.22% correct positionings respectively). The *often*- and *always*-words positioned correctly most often were contained in Set 1 (10 – 21.74% and 11 – 23.91% correct positionings respectively). Therefore, the Sepedi words selected as answer options for the pilot and final versions of the ASCQ were taken from Set 1 and Set 2. Verbal explanations of the words were nevertheless included in the instruction manual of the questionnaire, in view of the high occurrence of error on all the words selected.

Another interesting puzzle should be mentioned. The same word yields different results in different sets: the *sometimes*-word, *nako engwe,* elicited 15, 20 and 13 correct responses in Set 1, 2 and 3 respectively; the *often*-word, *gantshi*, elicited 10 and 5 correct responses in Set 1 and 3 respectively; and the *always*-word, *nako tšohle*, elicited 11, 9 and 4 correct responses in Set 1, 2, and 3 respectively. The results imply that the learners' choice of word might possibly have been a function of the other words in the set or of increasing confusion, although the factor of guessing also merits consideration. The risk of doubtful validity and reliability of measuring instruments where frequency categories are used in black languages in general, and in the ASCQ specifically, should certainly be noted.

4.9.3 The format of the response sequence

The more reliable sequence of response options also had to be determined before finalising the ASCQ. Section 4.8 mentioned the debate regarding inclusion of a neutral response option, for example '*Sometimes*' (Anderson, 1997: 893; Andrich, 1997: 879; Keats, 1997: 760). Half of the ASC questionnaires (N=42) in the pilot study contained the standard sequence of response options, as shown in Figure 4.1.

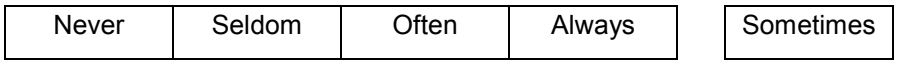
Figure 4.1 Standard response sequence

Never	Seldom	Sometimes	Often	Always

In the other half of the ASC questionnaires (N=43) in the pilot study, the middle category '*sometimes*' was removed from the response option sequence and presented detached on the right, as shown in Figure 4.2, in an attempt to prevent the overuse of the '*sometimes*' category. This decision was supported by findings of Cronbach (1942, 1946, 1950 in Anderson, 1997: 893) who stated that the number of neutral responses decreases, and the

number of unfavourable responses increases, resulting in higher reliability of the scale in general, when the neutral response option follows the other options.

Figure 4.2 Neutral response option placed separately



The alpha coefficients for the two formats are presented in Table 4.4.

Table 4.4 Alpha coefficients for the standard and altered response sequences

ASC	Format 1 (standard sequence – Fig. 4.1)	Format 2 (altered sequence – Fig. 4.2)
General ASC (GASC)	0.4640	0.6395
1st Language ASC (LASC)	0.5696	0.6613
Mathematics ASC (MASC)	0.7598	0.7505
Total Scale (TASC)	0.8326	0.8235

The alpha coefficients in respect of the GASC and the LASC (the first two sections of the ASCQ) support the findings of Cronbach, namely that the altered sequence improves reliability. The differences between the two versions in respect of the MASC (the last section of the ASCQ), and the TASC are much smaller, but in favour of the standard sequence. It must, however, be kept in mind that the pilot study did not include learners with HI (refer to 4.4.4), who might have a less flexible application of vocabulary regarding the response options. As the ASC of learners with HI was the primary focus of the study, it was decided to retain the standard sequence of response options until verification of the findings with learners with HI, even though the alpha reliability coefficients obtained for the two formats during the pilot study favour the altered sequence. It should be noted that the reliability of both sequences increases with repetition, and that the difference in reliability for the TASC is small and in favour of the standard sequence.

4.9.4 The items of the ASCQ

The origin of the items is indicated in Appendix C. Some of the words in the items were replaced to reflect more accurately the language used by and familiar to the learners (for example, *academic work* was changed to *schoolwork*, and *obtain* was replaced with *get*). Some words had to be replaced (decentering) to find equivalent forms in Afrikaans and

Sepedi (for example, *I dislike it …* was replaced with *It is bad for me …*). Some negative items were changed to positive items to facilitate comprehension, balance positive and negative items and/or keep the grammatical structure of the sentence the same in Afrikaans and Sepedi. The items were as follows:

Item number	Original item (refer to Appendix C)	Item as used in the pilot study[3]
1	I am happy with the schoolwork I do.	I am happy with the schoolwork that I do.
2	I am proud of my ability in academic work.	I am proud of my ability in schoolwork.
3	I am sure of myself in school tasks.	I am sure of myself in school tasks.
4	I am proud of my school report.	I am proud of my school report.
5	I feel good about my ability to do schoolwork.	I feel good about my ability to do schoolwork.
6	Most of my teachers do not understand me.	Most of my teachers do not understand me.
7	I am satisfied with my schoolwork.	I am satisfied with my schoolwork.
8	I think my ability is sufficient to cope with schoolwork.	I think my ability is sufficient to cope with schoolwork.
9	I feel worthless in class.	I feel worthless in class.
10	I feel good about my schoolwork.	I feel good about my schoolwork.
11	I think that I am capable of getting the results I would like to obtain in schoolwork.	I think that I am capable to get the results I would like to get in schoolwork.
12	I dislike it when my teachers ask me questions.	It is bad for me when my teachers ask me questions.
13	I have confidence in myself to do schoolwork.	I have confidence in myself to do schoolwork.

[3] Clauses were added to the second and third sections of the ASCQ to refer to the first language or mathematics, for example '*in the Sepedi class*', or '*mathematics schoolwork*'.

Item number	Original item (refer to Appendix C)	Item as used in the pilot study[4]
14	Many of my lessons I do not understand well.	I understand most of my lessons well.
15	I do not see myself as the best learner in class.	I see myself as a good learner in class.
16	I feel left out of things in class.	I feel left out of things that happen in class.
17	I think that I take a longer time than my friends at school to understand the lessons.	I think I take longer than my classmates to understand schoolwork.
18	I prefer it that other children do not see my work in class.	I prefer it that other children do not see my work in class.
19	I would not be able to achieve better marks, even if I worked harder.	Even if I worked harder, I would not be able to achieve better marks.
20	I think that the teachers do not treat me well.	I think that the teachers treat me well.

The retention and elimination of items were determined by considering the item-total correlation of each item in each section (GASC, LASC and MASC) in each language (refer to Table 4.5). The final selection of items had to be the same for each section (excluding the addition of clauses referring to school, the first language and mathematics in the different sections) and each language to enable comparison among the schools and learning areas. If an item did not perform well across all the sections and both languages, the item was either eliminated or changed.

[4] Clauses were added to the second and third sections of the ASCQ to refer to the first language or mathematics, for example '*in the Sepedi class*', or '*mathematics schoolwork*'.

Table 4.5 The mean, corrected item-total correlation and alpha for the pilot version of the ASCQ

Item number	Mean						Corrected item-total correlation						Alpha if item deleted					
	Afrikaans			Sepedi			Afrikaans			Sepedi			Afrikaans			Sepedi		
	GASC	LASC	MASC	GASC	LASC	MASC	GASC	LASC	MASC	GASC	LASC	MASC	GASC	LASC	MASC	GASC	LASC	MASC
1	3.61	3.79	3.93	3.8	4.17	4.00	.50	.53	.74	.31	**.09**[1]	.40	.64	.81	.86	.51	.56	.67
2	3.79	3.69	4.00	4.00	4.09	3.80	.32	.56	.65	.20	**.08**	.41	.66	.81	.86	.53	.56	.67
3	3.86	3.69	3.90	4.15	4.24**	3.80	**.11**	.59	.74	.27	.27	.34	.68	.81	.85	.53	.53	.67
4	3.82	3.48	3.97	3.64	3.59	3.33	**.14**	.41	.72	.27	.30	.33	.67	.82	.86	.52	.52	.68
5	3.71	3.72	3.79	4.23	3.74	3.74	.40	.47	.83	**.14**	**.19**	.40	.65	.82	.85	.54	.54	.67
6	3.25	3.62	3.38	3.79	3.83	3.72	.38	.38	**-.00**	**.16**	.24	.32	.65	.82	.88	.54	.53	.68
7	3.75	3.62	3.97	3.81	3.94	4.00	.42	.54	.80	.28	.20	**.07**	.65	.81	.85	.52	.54	.70
8	3.54	3.62	3.93	3.87	4.09	4.04	.43	.38	.74	**.02**	.24	.29	.64	.82	.86	.56	.54	.68
9	3.96	4.21**	3.79	3.89	3.63	3.61	**-.18**	.46	.22	.22	.21	.38	.70	.81	.87	.53	.54	.67
10	3.61	3.48	4.00	3.96	3.96	4.09	.45	.64	.81	**.06**	**.18**	.37	.64	.81	.85	.55	.54	.67
11	3.68	3.83	4.07	3.79	3.67	3.56	.29	.34	.67	**.13**	**.16**	**.08**	.66	.82	.86	.54	.55	.70
12	3.43	3.66	3.45	3.19	3.78	3.65	.40	.39	.50	.24	**.12**	**.19**	.65	.82	.86	.52	.55	.69
13	4.00	4.14	4.10	4.30**	4.15	4.15	.23	.21	.63	.31	**.18**	.43	.66	.83	.86	.52	.54	.67
14	4.00	3.97	4.14	3.83	3.72	3.94	.23	.38	.61	.27	.43	**.17**	.67	.82	.86	.52	.51	.69
15	3.32	3.28*	3.76	3.19	3.43	3.63	.33	.57	.54	**.19**	**.15**	**.12**	.66	.81	.86	.53	.55	.70
16	3.93	4.00	4.03	3.23	2.93	3.11	**.07**[2]	.22	.20	**.01**	.20	**.18**	.68	.83	.87	.57	.54	.69
17	3.71	4.00	4.24**	3.74	3.39	3.39	.36	**.18**	.35	.25	.23	.34	.65	.83	.87	.52	.53	.67
18	3.07*	3.41	3.52	2.94*	2.80*	2.69*	**-.27**	**.13**	.39	**.12**	**.03**	**-.03**	.73	.84	.87	.55	.57	.71
19	4.25**	3.79	3.72	3.34	2.94	3.37	.47	.36	**-.05**	**-.01**	**.00**	.38	.64	.82	.89	.57	.58	.67
20	3.29	3.38	3.14*	4.26	4.00	4.31**	.22	.55	.43	.20	.23	**.19**	.67	.81	.87	.53	.54	.69
Average													.67	.83	.87	.55	.56	.69

* lowest mean in the section ** highest mean in the section

[1] **Bold-printed** corrected item-total correlations indicate item-total correlations below .20, the acceptable standard.

[2] **Bold-printed and underlined** item-total correlations indicate item-total correlations below .20 across more than one language.

The corrected item-total correlations show that the Afrikaans version of the ASCQ has a total of 9 items across the three sections (GASC – 5, LASC – 2, MASC – 2) which do not fulfil the minimum criterion of .2 for item-total correlations. The Sepedi version has 27 items across the three sections (GASC – 9, LASC – 10, MASC – 8) which do not fulfil the criterion. The <.2 correlations cluster in the Sepedi version of Question 11 and Question 15 and the Afrikaans and Sepedi versions of Question 16, Question 18 and Question 19. The language in Question 11 was simplified by removing the clause "*I think …*" in both languages. Question 15 was accepted in the Sepedi version, because of the high correlation in the Afrikaans version. The low correlations in the Sepedi version might be attributed to a collective consciousness among the learners, especially in respect of a question requiring focus on the self such as "*I see myself as a good learner in class*". Question 16 was retained, because the correlations for the LASC and MASC were deemed acceptable. Question 18 was eliminated. Even when looking at the means, Question 18 is noticeable as it produced four of the six lowest means. The word order of Question 19 was changed back to the original "*I would not be able to achieve better marks, even if I worked harder*". Refer to 5.3 for the item-total correlations of the final version of the ASCQ.

The large number of < .2 correlations in the Sepedi version requires contemplation. One possible explanation might be that a collective consciousness prevails among the learners, especially in respect of questions requiring focus on the self, as mentioned above. Another possible explanation might lie in the fact that the researcher, and not the culturally congruent fieldworker, administered the pilot ASCQ, leading to words being incorporated in the ASCQ which were unfamiliar to many of the learners. The researcher implemented the pilot ASCQ in Sepedi, with some support beforehand from the fieldworker. It was only when the final ASCQ was implemented by the fieldworker during the main study, that the learners asked the fieldworker the meaning of some of the words in the items. It might be that the learners in the pilot study thought that if someone of another colour or language could speak their language, they should know the meanings of the words in their language; therefore, no questions were asked, even to the fieldworker. If this should be the case, the possible influence of language in cross-language studies needs to be acknowledged. Another possible explanation might be that the learners in the pilot study were not familiar with completing questionnaires. The low alphas of the Sepedi ASCQ, compared to those of the Afrikaans ASCQ, tend to support this explanation. The possibility of a measure of confusion in respect of the frequency categories with the Sepedi learners might also have contributed to the < .2 correlations in the Sepedi version. Finally, another factor to consider is that the language of teaching and learning for the learners in the Sepedi pilot group was mostly English, and not Sepedi. Only the first language, Sepedi, was taught in Sepedi. The

difference in the portrayed importance of their mother tongue and English in the classroom might have had an influence on the answering of the questionnaire. Consequently, the many < .2 items in the Sepedi ASCQ, with the most being in the LASC section of the Sepedi version, led to the addition of a fourth ASC section to the Sepedi ASCQ, namely English (EASC). The EASC was not analysed for the purposes of this study, but to only further investigate the self-evaluations of the Sepedi learners in different language learning areas. The relevance to ASC of data obtained from the EASC will, therefore, not be discussed in this study.

4.10 THE USE OF ACHIEVEMENT PERCENTAGES AND AUDIOGRAMS: PRINCIPLES AND PROCESS

The accuracy of data was especially important in collecting achievement percentages and audiograms. The most recent school achievement marks available at the time of the data collection were used, which were the marks for the second school quarter. The learners in all the schools had received progress reports at the end of the second school quarter, implying that all the learners participating in the study were aware of their academic achievement for the second school quarter, which assumedly then contributed to their ASC in the third school quarter, during which the data were collected. School 1, however, followed a continuous assessment programme, and the learners were at all times informed of their progress. When the ASCQ was implemented in September 2003, all the learners in School 1 were aware of their progress during the third school quarter; therefore, for School 1, school marks of the third school quarter were collected as well.

The school achievement marks of the participating learners were collected in every learning area, not only first language and mathematics, as stated in progress reports. All the marks were given as percentages, except for the mean achievement mark (MAM) across all learning areas given by School 5, which was expressed in categories with the following values: 1: 0% - 39%, 2: 40% - 49%, 3: 50% - 69% and 4: 70% - 100. Only School 1 had supplied a MAM across all learning areas for each learner. For Schools 2 – 5, the MAM across all learning areas for each learner was calculated, by summing the marks achieved in each learning area and dividing it by the number of learning areas. A number of learners did not have a complete set of school achievement marks, because of absences from school. A MAM across all learning areas were then calculated for the available marks.

Using only the most recent audiograms and only audiograms drawn by qualified audiologists enhanced validity and reliability of data from audiograms. The audiogram of the learner with

HI in School 1 was drawn by a registered audiologist in private practice, the audiogram of the learner with HI in School 2 was drawn by a fourth year audiology student at the Department of Communication Pathology of the University of Pretoria, South Africa, under the constant supervision of a registered audiologist, and the audiograms of the learners with HI at School 3 were drawn by registered audiologists at the school, employed by the Department of Education.

4.11 THE DEVELOPMENT AND USE OF INTERVIEWS: PRINCIPLES AND PROCESS

Through different techniques, the human act of conversation is transformed to a research method: the interview. The data obtained by implementing questionnaires lack the depth of information on the social contexts of the ASC of learners with HI that interviews can give (Tierney & Dilley, 2002: 454-455).

The participants (interviewees), who had been purposefully selected (Creswell, 2002: 207), consisted of the principals and the first language, mathematics and class educators. Participants decided on the time for their interviews. Interviews were conducted either in an office in the administrative block of the school or in the classroom of the educator (based on Creswell, 2002: 208).

The interviews in the study were conducted individually (Tierney & Dilley, 2002: 461) to allow opportunity for optimal expression by the participants, without the possibility of other participants inhibiting expression. The interviews were semi-structured in the sense that although there were pre-set open-ended questions, neither the wording nor the order of the questions was fixed and the questioning followed the lines taken by the participants, cues and interests (Creswell, 2002: 203-204; McMillan & Schumacher, 2001: 42, 269). McMillan and Schumacher (2001: 444) called this the *interview guide approach*. Interviews generally lasted between 60 and 90 minutes each. Questions were scrutinised to prevent leading questions from biasing the data (McMillan & Schumacher, 2001: 269). Note was taken of interviewer characteristics which might influence the course of the interview, such as age, gender, perceived socio-economic level and racial background of the interviewer (McMillan & Schumacher, 2001: 269-270).

Questions in the interview schedules aimed to elicit information by which the context of the learners with HI in the schools could be understood better, but also to understand meanings that the participants ascribed to the concepts of inclusive education and impairment. The

accuracy of 'facts' supplied by the participants was not verified, as the perceptions of the participants were regarded as more important and influential on the ASC of the learners in day-to-day teaching. Each interview started with a brief explanation of the study and assurance of confidentiality and anonymity outside the interview. The interviews with the *principals* included questions relating to general information about the school, the goals envisioned by the school, the support provided by the school, the role played by BLP and the progress of inclusive education and participation policy implementation at the school. The *first interview with the educators* included questions relating to their work with the Grade Sevens, challenges they experienced, support available and required, inclusive education, their understanding of ASC and teaching background. The questions asked during the *second interview with the educators* were aimed at understanding the classroom observations and included questions relating to their work and preparations, particular incident(s), inclusive education and observations regarding a particular learner(s). Interviews were concluded by thanking the participants, providing additional opportunity to ask questions to the researcher and once again emphasising confidentiality and anonymity (based on Creswell, 2002: 208).

The interviews with the principals started with general information regarding the school set-up. It was argued that principals were fully knowledgeable on this score and that sharing the information would break the ice and set a positive tone for the rest of the interview. The interviews with the educators started with a general question about how their days went. It was argued that such a question would convey interest in what the educator did. The question also brought an informal tone to the interview and made the transition to more complex questions easier. Questions on their teaching background were deliberately placed later in the interview, as these questions would suggest a question-answer-format for the rest of the interview and not a conversation (based on McMillan & Schumacher, 2001: 448-449).

The interviews with the school principals were conducted during the first two weeks of August. The educators responsible for the first language, mathematics and class education at School 1, 2 and 3 participated in interviews. In School 1 and 3, the relevant educators were contacted telephonically and the purpose and methods of the study were explained, as well as the implications of involvement for the educators. In School 2, the principal invited all the relevant educators, as well as the vice-principal (Senior Phase), the head of department of the Grade Seven classes and the school co-ordinator of special educational needs (*sic*) to an informal meeting where the necessary information was given and questions addressed. Initially it had been planned to complete the first educator interviews before the classroom observations commenced, but it was not possible, because of the hectic schedules of the

educators. The first educator interviews were conducted before and after school and/or during free periods as soon as the relevant educators could find time for the appointments. The second interviews with the educators had been planned to coincide with the completion of the classroom observations. By conducting the interviews so soon after the observations, it was hoped that the educators would still be familiar with the classroom activities which had occurred during the third school quarter. Once again, because of educators' busy schedules, many of the interviews were only conducted during the beginning of the fourth school quarter[5].

The flexibility and adaptability of interviews allow probing, following up, clarifying and elaborating to enhance understanding of the matter being researched. Both verbal and non-verbal communication can be noted and incorporated into the data (McMillan & Schumacher, 2001: 267). Probing was done carefully, after enough time had elapsed for responding, without interrupting or expecting specific responses (Creswell, 2002: 208; McMillan & Schumacher, 2001: 271).

During the interviews brief notes were made of responses, non-verbal behaviour and specific questions or themes to follow up on. The interviews were also audiotaped, transcribed and analysed for themes related to the research question (based on Creswell, 2002: 203, 208; McMillan & Schumacher, 2001: 42, 270-271, 450).

Refer to Appendix F for an interview schedule of an interview with the principals, Appendix G for an interview schedule of a first interview with the educators and Appendix H for an interview schedule of a second interview with the educators.

4.12 THE DEVELOPMENT OF PROJECTION MATERIAL: PRINCIPLES AND PROCESS

A problem with spontaneous responses is that some learners repeat excessively or perseverate on a specific response. Some responses might be irrelevant to the investigation from the perspective of the researcher (Brinthaupt & Erwin, 1992: 152). Also, it would not be impossible for some learners to manipulate their responses. As with interviews, the gender, age, race and social status of the projection picture administrator can influence the learner during implementation of the projection pictures (Säljö, 1997: 101). Analysis of responses is

[5] The GDE only grants permission for research to be conducted at schools until the end of the third school quarter. With permission of the school principals, as required by the GDE, however, the interviews were conducted.

made more difficult by the concern whether two researchers who analyse the same protocol, will draw the same conclusions (Säljö, 1997: 101).

As with questionnaires, firstly, the content of the pictures was determined. The content of the projection pictures was aimed to elicit responses from the learners regarding questions that related to the study. Each construction on the projection picture contributed to the aim of the study and was functional. Anything else might have functioned as inappropriate stimuli and influenced the responses. The pictures had to be appropriate for the age and surrounding environment of the learners. Separate pictures for boys and girls were developed corresponding to the developmental phase of the learners.

The development of the projective pictures in this study was an extension of the development of projective pictures in a previous study (Du Plessis, 1999). Initially, Picture X (Jacobs, 1981: 244) (refer to Figure 1 of Appendix I) was selected from a series of pictures used with white learners. The rationale behind the choice was that other stimuli, which might influence the participants inappropriately, were absent. The stark silhouettes were thought to present a sufficient cue to continue with projected content. In accordance with the ASCQ, three identical pictures were used for a general ASC, a first language ASC and a mathematics ASC. Captions of '*In the schoo*l', '*In the Afrikaans/Sepedi class*' and '*In the mathematics class*' were added to the pictures in the respective languages of the participants to denote the different class contexts. The pictures were presented to an expert in the field of meaning attributed by black South African learners. The responses[6] indicated that the pictures were judged too dark for the intended participants, and containing the possibility of criminal connotations. The stationary and solitary figure could also be problematic. Based on the feedback, it was decided to alter the choice of picture.

Picture 2 ("*Teacher and children in the classroom - reveals attitudes towards teachers, classmates and the learning situation*") of the Bar Ilan Picture Test (Itskowitz & Strauss, 1977) was subsequently considered. It depicts a realistic and meaningful situation regarding learners in an educational setting (refer to Figure 2 of Appendix I). The picture was adapted to reflect some of the participants in the study (refer to Figure 3 of Appendix I). Comments by the experts consulted were that there were too few learners in the class and that the bookcase was inappropriate. Consequently, more learners were added to the picture, the classroom was filled with desks and chairs, the bookcase was replaced with windows and a

[6] "*It's too dark ... criminal, you know ... if you think of the environment where the children come from*."
"*It's too solitary*."
"*It's stationary ... there isn't any movement*."

chalkboard was added. The chalkboard provided the opportunity for relevant learning content to be entered, to optimally reflect a classroom in association with the learner's context. Two versions were developed: one version depicted a classroom in a regular and full-service school, and the other a classroom in a special school. The two versions were identical, except that the appearances of the learners in the pictures were adapted to represent the appearances of the learners in each school and that the latter picture card had fewer learners in the class to represent the smaller classes the learners in the special school were accustomed to. Each version contained separate picture cards for a girl interacting with either a male or a female educator, and a boy interacting with either a male or a female educator. The choice of a card during an interview with a learner would depend on the gender of the learner and the educator of the learning area under discussion. A line was added behind the ear of the learner standing next to the educator so that the resulting ambiguous double line could be interpreted either as a hearing aid or as merely part of the ear. Headings further situated the various pictures: pictures were available for school in general, the first language class and the mathematics class (refer to Figure 4 of Appendix I for an example of a final projection picture). All pictures were in an A4-size.

The learners were requested to tell a story about each of the pictures concerning what had happened before the time, what was happening now, what the feelings and thoughts of the people were, and what was going to happen afterwards. No time limits were set and responses were written down (Walsh, 1997: 956) and recorded on audiotape. The pictures were administered in the first language of the participants, namely Afrikaans and Sepedi. Where necessary, the culturally congruent fieldworker assisted. Open-ended questions were asked, but no previously set protocol of questions could be compiled, as the responses of the learners determined the ensuing questions. No leading questions were asked. The audiotapes were transcribed and translated, where necessary.

The projective pictures were administered in School 1 and 2 to the learners with HI and some of the learners who came to the attention of the researcher during the classroom observations, during the third school quarter. The projective pictures could only be administered to the learners with HI in School 3 during the fourth school quarter. Some of the responses of the learners led to some conversation about the school, classes, peers and educators, but the learners were not formally interviewed as the adults in the study had been.

4.13 CLASSROOM OBSERVATIONS: PRINCIPLES AND PROCESS

Observations are precise sightings of participants and can focus on play, language, behaviour and/or any other aspect of development (Harding & Meldon-Smith, 1996: vi). Observations are a natural part of interaction and are present wherever people are in contact with one another (Botes, 1987: 76). Observations can be made in natural or artificial situations (Moskowitz, 1986: 300). *Natural situations* are situations where people usually find themselves and where they are unaware of being observed. Observations made in natural circumstances often have high face validity, but can be time consuming considering that the target behaviour does not necessarily occur often (Anderson, 1997: 891). Familiarity of the environment also contributes to validity: a child's play in a dentist's waiting room will probably be different than at home (Hobart & Frankel, 1994: 5). Harding and Meldon-Smith (1996: 5) and Meier (1994: 49) mentioned that people can change their behaviour if they are aware that they are being observed, such as trying to act in a socially desirable way (Anderson, 1997: 893). Reactivity is the possible distortion that takes place when people are aware they are being observed and perhaps want to impress the observer, or are influenced by the age, gender and/or race of the observer (Ball, 1997: 243-244; Meier, 1994: 49, 51). *Artificial situations* are situations unfamiliar to people, where they know that they are being observed. Research in artificial circumstances is often less time consuming, but it is difficult to generalise or extend conclusions (Anderson, 1997: 891).

According to Kaplan (1997: 115), observation and interpretation cannot be separated: "... *there is more to observation than meets the eye*." What is observed, depends on the concepts and theories with which the observer regards that which is being observed. Behaviours and events that do not fit in with the concepts and theories, are often not observed or regarded as insignificant (Kaplan, 1997: 115).

The researcher attended the first language and mathematics classes of the Grade Seven classes selected at the full-service and special schools during the course of the third school quarter. The culturally congruent fieldworker sometimes accompanied the researcher to observations at one full-service school and could explain and interpret behaviour and events in context, thus expanding the researcher's understanding of the participants. Differences in observations were discussed and interpretations were eventually agreed upon.

At the start of every observation, a classroom map was drawn to record the class layout and the positions of the learner(s) with HI, the educator and the researcher. The classroom dynamics and the learner(s) with HI were observed. Field notes were made, in addition to

audiotapes of the conversation in the class. The audiotapes were transcribed and analysed for better understanding of the classroom context. Accurate field notes and audiotaped observations enhanced the reliability of the data. The validity of the observations was verified by asking the educators during the second interview to explain some of the incidents that occurred during the period of observation (refer to Taft, 1997: 73-74).

The classroom observations were initially scheduled on a rotation basis so that the researcher would make weekly observations of the first language and mathematics periods at School 1, 2 and 3, each observation at a school on a different day. A minimum of six observations of each learning area at each school during the course of the school quarter had been planned. To increase understanding of the class situation and to hone observation skills, one class of the class educator was observed once at two of the schools. The class educator of the third school was already participating in the study, and was, therefore, already being observed. It was argued that making continuous observations during the school term would produce a more accurate reflection of classroom practice during a school quarter than a week's observations *en bloc* at each school. It might also be that the learners would be less influenced by the presence of an observer who visited their classes regularly. Despite rigorous planning, the intended number of observations in each learning area at each school could not always be made on account of within-school factors such as an entrepreneurial day which led to shortened class periods, changes in the time-table and educators who were absent. At School 1, five observations were made of the Afrikaans class and six observations of the mathematics class. At school 2, four observations were made of the Sepedi class and five observations of the mathematics class. At School 3, four observations were made of the Afrikaans class and six observations of the mathematics class.

The classroom activities were audiotaped and transcribed, and data were augmented by the field notes made during the observations. Classroom activities which had been conducted in Sepedi were translated. The translations were checked by the culturally congruent fieldworker.

4.14 THE COMPILATION OF BACKGROUND INFORMATION: PRINCIPLES AND PROCESS

Background information added to enhance understanding of the context of the ASC of learners with HI. Not all the learners with HI had background information in a written form, and additional measures had to be taken to obtain the necessary background information for

understanding and comparing (based on Creswell, 2002: 209; McMillan & Schumacher, 2001: 42). The compilation of background information was done only after the classroom observations had been made, as the classroom observations sensitised the researcher to the context of the learners and each learning area at each school.

Background information was obtained by consulting the official learner profiles kept by the schools. A learner profile contained school history, all available school reports, anecdotal comments from educators, a family profile and, where applicable, the history and specifics of the learner's HI, including an audiogram. In School 1 and 3, the researcher had access to the profiles of the learners. Selected pages from the profiles of the learners with HI were photocopied to clarify the context of the learners. School 2 did not have profiles, but the researcher conducted an interview with the mother of the learner with HI to try to obtain the school history, a family profile and the history and specifics of the learner's HI. This learner was also taken for an audiological assessment at the Department of Communication Pathology at the University of Pretoria to investigate her HI and obtain an audiogram. The parent of the learner with HI in School 1 was unavailable for interviewing purposes, and the parents of four of the six learners with HI in School 3 were resident in towns outside Pretoria. As the profiles of the learners in School 3 were comprehensive, it was decided not to conduct telephonic interviews with the parents.

The educators at each school were requested to identify books that would be exemplary of books of learners with high, average and low achievement in the particular learning areas (based on McMillan & Schumacher, 2001: 451-452). Selected pages were copied from the first language and mathematics books of the learners with HI, two high achievers, two average achievers and two low achievers in School 1, 2 and 3. Examples of their schoolwork contributed to a better understanding of their school marks.

4.15 ETHICAL PRINCIPLES ADHERED TO DURING THE RESEARCH

Firstly, permission was obtained from the Gauteng Department of Education to conduct research in schools in their jurisdiction (refer to Appendix J). The permission stipulated several procedures to be followed, two of them being a letter to the District Senior Manager (refer to Appendix K) and feedback after completion of the research. Secondly, permission was obtained from the principals of the selected schools. According to the stipulations, the school governing board also had to be asked for permission, *via* the principal (refer to Appendix L for an English example of a letter addressed to the principals and school governing board. The letter of permission and the document in respect of the purpose and

anticipated outcomes accompanied the letter and have already been appended.). Lastly, permission was also obtained from the parents or guardians of the learners in the Grade Seven classes to be involved. By implication learners had a say in their participation. Letters of permission that explained the nature of the study were sent to parents or guardians. Anonymity and confidentiality were assured. Letters of permission were sent for participation in the pilot study (refer to M1), audiological assessment at the Department of Communication Pathology (refer to M2), participation in the questionnaires and observations at the full-service and special schools (refer to M3), participation in the questionnaires only at the regular schools (M4), and participation in the learner interviews (refer to M5) (refer to Appendix M for examples of the letters M1 to M5). The parents of one learner in School 1 and one learner in School 5 refused permission for their children to participate in the research. The learners were therefore excluded from the research. A document was also completed for the Faculty Research Ethics Committee.

Learners were requested to write their names on the ASCQ for purposes of correlation with school marks for possible future research in respect of ASC. Educators (and principals) were not identified by name and surname on the audiotapes made during the interviews or classroom observations, but by school and educator number. The researcher employed the services of a company to do the transcriptions of the audiocassettes. Each typist was requested to sign a statement regarding the confidentiality and anonymity of the participants and content of the audiocassettes (refer to Appendix N).

During the research, support was given to educators and learners where possible. Support to educators sometimes entailed supplying information in respect of their questions. Where possible, educators were empowered to deal with similar situations. Support to learners entailed audiological assessments and feedback to their parents. One learner required more support and, with the cooperation of the parents, she underwent several further assessments in respect of school placement, life orientation and guidance.

4.16 CONCLUSION

Research methodology as a science incorporates two poles. As can be seen from Chapter 4, on the one hand research methodology comprises the study of specific research techniques with practical implications such as the interpretation of protocols and surveys or statistical computations. On the other hand, methodology comprises the philosophy of science, and concepts such as objectivity and truth with only indirect practical implications.

Methodology is then both a generalisation of techniques and a concretisation of philosophy (Kaplan, 1997: 112).

The challenge of the research has lain in taking multifactorial and multilevel account of the contexts that could impact on the ASC of learners with HI. The contexts of schools are never static and issues of change will always be operant, especially when the schools are beginning to implement the inclusive education and participation policy. Therefore, the research demanded the highest level of sophistication, seeking the synthesis of findings from both quantitative and qualitative research, and specialised clinical skills to reach an understanding of the ASC of learners with HI in an ever-changing context.

The mixed multi-method research design which allows for triangulation of data combines the advantages of each form of data. The quantitative data provide grounds for generalisation in respect of the ASC of learners with HI, and the qualitative data offer information about the context and dynamics of the ASC of learners with HI (based on Creswell, 2002: 566). Chapter 5 presents, discusses, and interprets the results for each form of data collection.